Guiding learning teaching

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General conclusions and discussion

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School-university partnerships aim at the enhancement of the quality of teacher education by, among other things, a better preparation of student teachers for actual teaching (e.g., Edwards et al., 2009). Due to the growing responsibilities of schools for the education of student teachers in such partnerships, the traditional practicum, based on the application – of – theory model, has to transform into an authentic learning environment for student teachers (Timmermans, 2012), where working and learning can be integrated (Onstenk, 2001). The learning process of student teachers at work is seen as (guided) work-based learning; learning for and from work (Streumer & Kho, 2006). This process is organised according to the principle of learning through participation in real, meaningful practices (e.g., Ten Dam & Blom, 2006) and structured as a modern apprenticeship (Guile & Young, 1998). Apprenticeship is seen as a pedagogical metaphor for professional preparation that enables the student teacher "to acquire the knowledge and skill, both conceptual and practical, which the community of practitioners has built up over time" (Sullivan, 2004, p. 7).

Because of the complex nature of both the teaching profession (Martin & Russell, 2009) and the school as a workplace, a pedagogy of work-based teacher education (PWBTE) is needed. Based on Billett (2001a), we argue that such a pedagogy should be built on three components: first, the affordance (or invitational quality for learning participants) of the school, second, agency, the way student teachers

engage in workplace activities, and finally, the intentional structuring of practice and the provision of guidance aimed at developing vocational expertise. This thesis focuses in particular on the third component.

The guidance provided should offer student teachers opportunities to participate in practice in a legitimate and peripheral way (Lave & Wenger, 1991/2002) – participation that goes beyond merely looking at behaviour and how it is shaped by context. Instead, guidance is part of the constant situated (re)negotiating of meanings, the circulation of knowledgeability (Edwards, 2005). Participation and re(negotiation) results in shared definitions and understanding about teaching aspects. An understanding that is developed in situated, reciprocal interactions between mentors and student teachers (Glazer & Hannafin, 2006; Leinonen & Bluemink, 2008).

Consequently, this type of guidance contributes to a transformation of ideas and behaviours of student teachers, resulting in an increased understanding of the school and classroom context and its demands (e.g., Edwards et al., 2002; Guile & Young 1998) with changing participation as a result (e.g., Billett, 2001a; Edwards, 2005; Lave & Wenger, 1991/2002).

In line with Billett (2002a), we argue that this guidance must be provided near and at the workplace and should be aimed at (a) developing the competences related to acting and thinking as a teacher in actual practice, and (b) extending student teachers' knowledge and making it useful in new tasks and different circumstances.

In this thesis, intentional structured practice is realised in two ways. Firstly, in thematic sessions, derived from the curriculum of a teacher education institute (TEI) and enacted by school-based teacher educators (SBTEs) and student teachers at school. Secondly, in a by the researcher developed collaborative mentoring approach, which is enacted by mentors, student teachers and SBTEs in actual practice. The guidance given in the context of this approach is aimed at sharing practical knowledge as a means to provide student teachers with opportunities to better understand the behaviour and underlying pedagogical reasoning (practical knowledge) of experienced teachers. The aim is that they can construct the necessary practical knowledge, skills and

habits in situations where they act as teachers themselves (e.g., Fuller et al., 2005; Kim & Hannafin, 2008).

During lesson-based conversations and actual teaching, guidance is provided by mentors both by talking about teaching in lesson-based conversations and during actual enactment of teaching. Tools used here are work-based modelling (critically showing and discussing teaching behaviour and the related thinking) and scaffolding (support through suggestions and short deliberations during actual teaching by student teachers).

Our main aim is to contribute to the development of a pedagogy of work-based teacher education (PWBTE) by exploring *whether and how guidance aimed at sharing practical knowledge is and can be realised (a) near the workplace during formal sessions at school enacted by school-based teacher educators and (b) in mentoring activities related to actual teaching practice through modelling and scaffolding*.

The study was executed in four schools, partners in a school-university partnership with both a research-based university and a university of applied sciences.

In the **first part** of the thesis, guidance at school in thematic sessions especially organised for student teachers about, for example, class management, lesson design, collaborative learning and pupil mentoring, was studied. The **second part** focused on guidance by mentors and SBTEs during preparation, enactment, and evaluation of actual teaching practice.

Summary of the results

Part one: Sessions at school, guidance by SBTEs

The first study (Chapter 2) focused on guidance by SBTEs while enacting sessions – derived from the institutional curriculum – at school. Four sessions in two different schools were investigated through an

instrumental case study (Stake 1995; Yin 2003). Each session was led by two school-based teacher educators. Furthermore, in one of the sessions the school psychologist was also involved. Based on Van der Klink (2004), the cognitive apprenticeship model (CAM) by Collins et al. (1989, 1991) functioned as a heuristic framework for analysing and describing the sessions at school. The, by Seezink and Van der Sanden (2005) extended, CAM was further enhanced with insights from the research on teacher education and workplace learning, in order to create a useful, descriptive tool for school-based teacher educators' guidance in sessions near actual practice. (For an overview of the extended CAM see Appendix A). Attention was paid to the *content* brought in and the *methods* used by the SBTEs, and, moreover, to the *sequence of learning activities*, which refers to the order in terms of the *diversity* and *complexity* of the learning activities, and, finally, to the school as the *social context* in which the student teachers are learning teaching.

The analysis of the actions of the school-based teacher educators showed the use of role plays, approximations of actual practice (Grossmann, Compton et al., 2009), in relation to the themes at hand. Additionally, although to a lesser extent, student teachers brought in their experiences from actual teaching. Materials used were directly derived from the teacher education institute. SBTEs feedback on student teachers' activities and answers to their questions were mainly based on their own experiences as a teacher. As a result, SBTEs dealt in a rather restricted way with *conceptual* and *practical knowledge*. Sharing practical knowledge was limited to practical tips and advice, instead of revealing and discussing the underlying ideas and insights. Different *methods* (modelling, scaffolding, fading, articulation and reflection) were used to provide support in a congruent way, meaning SBTEs acted in the ways they asked their students to act in their classrooms when teaching pupils. SBTEs, however, did not explicate what they were doing or why they did it, and, as a result, their modelling stayed implicit. This is in accordance with the findings by Swennen et al. (2008) who studied institute-based teacher educators' modelling practices. The complexity and diversity (*sequence*) of the program mostly depended on the preparation of the SBTEs, supplemented with

experiences brought in by the student teachers. Opportunities for learning offered by the *social context* of the school were scarcely made visible to student teachers. Although SBTEs referred to the guidance mentors would provide, no structural situations were mentioned in which student teachers would enter into discussion with professional practitioners in the school and relate to their knowledge.

Based on these results, we concluded that 'cognitive apprenticeship' had not reached an optimal stage of development in these sessions. We noticed SBTEs did indeed possess and use practical teacher knowledge, which their student teachers had yet to acquire. SBTEs stated, however, that they did not know enough about theory to help student teachers develop (theoretical) concepts. In addition, we noticed transfer-oriented reflection (Guile & Young, 2003; Kelchtermans 2001) was not realised. No attention was paid to the support of student teachers rethinking the limits of their knowledge or discussing ways to make their knowledge useful in novel tasks and under different circumstances which is considered an aspect of a PWBTE. As we know, this desired broadening of knowledge cannot simply be taken for granted, but asks for adaptive learning and the related guidance instead (Volet, 2012).

All in all, the sessions more resembled a practice-based institutional learning environment physically situated near the workplace, rather than a learning environment at school in which student teachers' participation in actual practice was supported. Based on this, we examined whether the guidance of mentor teachers would provide for stronger work-based learning environments and the related pedagogy than the institute driven sessions by the SBTEs.

Part two: Participating in actual teaching: guidance by mentor teachers

Teaching is considered to be knowledge work (Thiessen, 2000), and the practical knowledge of experienced teachers – knowledge in use – is situated in the context of making pedagogical decisions based on the teacher's definition of the situation at hand (e.g., Cochran-Smith & Lytle,

1999; Gholami & Husu, 2010; Verloop et al., 2001). Guidance aimed at sharing practical knowledge, both in talking about teaching and during actual lesson enactment is fundamental for providing opportunities to develop practical teaching knowledge by student teachers, and is one of the affordances the school has to offer to teacher education. Sharing practical knowledge by showing teacher behaviour and explicating this knowledge, however, is not easily done (Hagger & McIntyre, 2006; Lave, 1996; Thiessen, 2000; Zanting et al., 2003). Teaching cannot simply be articulated (Martin & Russell, 2009), and for different reasons – both epistemological and socio cultural, according to Feiman-Nemser (1998) – sharing practical knowledge is not obvious in regular mentoring conversations. Before starting the mentoring approach, during preparatory conversations with cooperating teachers, we actually noticed professional norms of idiosyncrasy and authenticity existed and going into a teacher's classroom was sometimes considered an 'intrusion'. Furthermore, mentors stated they did not know which knowledge informed their actions after so many years of gradually incorporating (reflected) experiences, a process known as knowledge encapsulation (Van de Wiel, 1998 in Verloop et al., 2001). Therefore, sharing practical knowledge with student teachers during mentoring is not obvious.

To create opportunities for sharing knowledge, we developed a collaborative mentoring approach (CMA), derived from the collaborative apprenticeship model of Glazer and Hannafin (2006). CMA is seen as an intentional structuring of practice, one of the features of a PWBTE (Billett, 2001a).

The approach consists of mentoring cycles based on three lessons that are collaboratively prepared, enacted and evaluated. The first lesson is enacted by the mentor, the second lesson is taught together with the student teacher (co-teaching), and the third lesson is performed by the student teacher. Two mentoring activities can be distinguished in the approach: (a) guided conversations about teacher behaviour and the underlying pedagogical reasoning and (b) implicitly and explicitly shown experienced teacher behaviour during the solo taught lesson by the mentor and the co-taught lesson. Mentoring tools used in this thesis are *work-based modelling* – showing experienced teacher behaviour

in actual practice along with critically discussing this behaviour with student teachers (based on Loughran, 2006) – and *scaffolding* – providing support to student teachers while teaching (based on Collins, 2006; Warford, 2011; Wood et al., 1976) (for an overview see Appendix F). In line with Harrison et al. (2006), the offered learning opportunities in this approach are as much as possible learner-centred. To realise this, before a collaborative mentoring cycle starts, student teachers articulate their learning needs, related to institute-based demands, with the help of the SBTE.

The next three studies of this thesis were all grounded on this collaborative mentoring approach, which was enacted by four teams of mentor teachers, student teachers and SBTEs. Each of the three studies represented a focus on a separate aspect of the approach.

In **Chapter 3**, we examined participants' *appreciation of the effectiveness* of the approach and their perception of *relevant conditions that contribute to that effectiveness* with the help of a comparative case study. The results indicated that participants, although some more than others, appreciated the approach and its components as effective means in guided work-based learning. All teams, except for one, reported that lesson-based conversations went deeper and new learning issues emerged sooner compared to regular mentoring conversations. Conditions related to the features of the approach that contributed to the *effectiveness* were (a) the repetitive cyclical structure, (b) the collaborative discussions and lesson enactment, (c) the focus on student teachers' learning needs, and (d) the acknowledgment and valuation of mentors' practical knowledge. Important *personal conditions* were (a) the willingness to demonstrate and discuss actual teaching and to learn from each other, (b) mentor competencies related to subject knowledge and pedagogical methods, (c) student teachers' knowledge on how to tap mentors' teaching knowledge. The most important *organisational condition* was 'time', followed by the support by the SBTEs and their collaboration with the mentors. All participants also mentioned the need of good and trustful relations between the participants as the basis for any mentoring activity. These relations were established be-

fore starting the approach, but, based on mutual openness, they were further improved during the enactment of the approach.

In **Chapter 4**, we focused on two contrasting cases we found in study two: a relatively unsatisfied team and a satisfied team (Merriam, 1998; Yin, 2006). The first team (less satisfied) did appreciate the structure of the approach, but judged its outcomes identical to regular mentoring conversations. For the second team (satisfied) the benefits of the approach were also related to the improvement of the lesson-based conversations. The critical discussions within this team offered the student teacher insights into his/her learning needs more quickly compared to regular mentoring conversations. In addition, the approach also helped the mentor to overcome her reluctance to interfere with the student teacher's teaching, and opportunities to provide guidance while teaching were also seen as beneficial. Mutual learning as a result of the critical dialogues and observations of both the mentor and the student teacher was reported.

The aim was to find out whether the difference in appreciation could be related to differences in the implementation of the approach. Nine different modelling actions were identified and five different domains were acknowledged. Concerning the characteristics of practical knowledge, we were interested in the extent and diversity of the practical knowledge shared by the mentors. Furthermore, we were interested to which degree the knowledge was interconnected, meaning whether different knowledge domains were brought into discussion while a particular, practice-related, issue or situation was at stake.

A case analysis was performed with a mixed methods approach with which we compared the implementation of the approach in both teams. Implementation was studied in terms of the following criteria: (a) the content of the lesson-based conversations reflects practical knowledge, and (b) the mentor teacher uses a diverse set of modelling actions. Furthermore, we analysed whether the lesson-based discussions focused on the student teachers' learning needs (Van Velzen, Volman & Brekelmans, under preparation).

The two teams differed significantly in the extent of practical knowledge shared by the mentors, the modelling actions used by them and the attention for the student teacher's learning needs. We concluded that in the more satisfied team the collaborative mentoring approach was implemented more as wished-for. The relationship between implementation as intended and appreciation of the approach, however, was not very strong and the difference in the level of appreciation for the learning opportunities could not completely be attributed to the approach. The differences between the two teams related to the diversity of practical knowledge shared, and the interconnectedness of practical knowledge domains proved to be non-significant.

In addition to these quantitative differences, qualitative differences in the conversations of the satisfied and the less satisfied team could be established as well. Not only was there more practical knowledge shared in the satisfied team, a broader range of teaching related topics was discussed in the lesson-based conversations as well. Also, the language used by the mentor in this team was more inquisitive rather than directive; for instance, more questions were asked instead of statements about expected behaviour were given.

Both mentors spoke about what they valued and considered important within the context of actual practice, realising a process of reassembling and (re)constructing ideas on actual classroom teaching. The conversations of the less satisfied team, however, could be characterised as reflection on what the student teacher planned to do and what she actually did hence the attention was on curriculum delivery instead of attention for pupil learning. According to Edwards and Protheroe (2003), this can be seen as one of the problems in an apprenticeship approach of teacher education. Further analysis of the more satisfied team revealed deliberative discussions on what might work in a particular situation informed by the mentor's practical knowledge. Subjects that related teaching to pupil learning were discussed and opportunities were provided to the student teacher to learn to connect practical teaching knowledge with promoting pupil learning. As we know from Loughran (2006), paying attention to this connection can create a stronger learning environment for student

teachers because it helps student teachers to learn to operate on two levels. The first related to the nature of the 'content', which must be learned by pupils; and the other related to the nature of the teaching, which must be employed by the teacher. Furthermore, emerging new understandings of daily teaching problems and pupil learning by the student teacher were explicitly involved in the conversations by the mentor. As a result, modelling became an opportunity for the student teacher to associate learning to teach with working as a teacher (hence, learning teaching), using ideas and solutions built up over the years by the mentor as an experienced teacher.

In contrast to modelling by institute-based teacher educators in teacher education institutes, observed experienced teacher behaviour in actual everyday practice and the related pedagogical reasoning behind it can be discussed in work-based modelling. Team one (less satisfied) mainly discussed 'what' the mentor and student teacher had been doing in order to realise at least some of the intended results. This is what, Gholami and Hussu (2010, p. 1526) named the 'what works' notion by which teachers can legitimise their activities. In the second team, the teaching behaviour was also discussed in terms of a commitment related to "professional responsibilities generally and care about pupils specifically," a justification which is placed at the heart of the professional 'moral ethos' (Gholami & Husu, 2010, p. 1525).

The study in **Chapter 5** focused on collaborative lesson enactment (co-teaching). Co-teaching, embedded in collaborative planning and evaluation, provided an environment in which the mentor could guide the student teacher while teaching. Co-teaching, in contrast to team-teaching, is based on shared responsibility for the whole lesson and mutual involvement: being attentive, showing cooperative behaviour in the classroom and giving space to each other to step in and out during lesson enactment (Martin, 2009). Guidance during enactment could be given in the form of modelling – stepping in by the mentor addressing pupils during student teacher's teaching – and/or scaffolding – stepping in by the mentor addressing the student teacher during student teacher's teaching –. Whether and how co-teaching was prepared,

realised and evaluated, in addition to whether and how modelling and scaffolding was used during co-teaching was investigated with the help of a descriptive multiple case study. Four teams of mentors and student teachers in two schools were involved.

During the preparation of co-teaching we found that all four participating teams made agreements on task division, running from team teaching (merely dividing tasks, no mutual involvement) to agreements on how and when to step in and step out during enactment (co-teaching). Two teams discussed ways to complement each other during lesson enactment. One team also discussed how and when the mentor would step in during student teacher's lesson enactment.

Mutual involvement during lesson enactment could be observed in two teams. In one team taking over was done on the agreed moments, in the other team mentor and student teacher also used signs to ask for or give support. Reasons for not realising mutual involvement in a productive way by the two other teams could be related to convictions, held by the mentor and/or the student teacher, on how to become a teacher. In addition, in one team ideas on the possibility of negative pupil reactions was mentioned.

Modelling teacher behaviour during enactment occurred on two levels. All mentors taught a part of the lessons, providing the student teacher opportunities to observe without the pressure of teaching by implicit modelling. Furthermore, by stepping in during student teachers' lesson enactment the mentor provided student teachers with opportunities to step out and observe teacher behaviour from a peripheral position by explicit modelling. Then afterwards the student teacher could step in again, taking over the lead and potentially experiencing new behaviour. *Scaffolding*, directly addressing the student teacher's teaching both requested and unrequested by the student teacher was enacted by one mentor. Verbal and (small but effective) non-verbal encouraging signals, suggestions and short moments of discussion were used to support the student teacher. During lesson evaluation the modelling and/or scaffolding actions of the mentors were neither explained nor discussed.

Providing support during lesson enactment meant the mentor had to cope with alternating their teacher role (addressing pupils' learning while modelling) with their mentor role (addressing the student teacher's teaching and learning while scaffolding). These role transitions between being a teacher and being a teacher educator proved to be difficult.

All student teachers adapted their behaviour, more or less, to the behaviour modelled by the mentor. One student teacher had a mentor who was unwilling to interfere and this student teacher regretted the missed opportunities for immediate feedback. All but one of the student teachers judged opportunities to be guided during actual teaching as positive. The one who did not appreciate co-teaching worried that pupils would see her as a 'teacher's assistant', and was convinced of the idea that gaining individual experiences in classrooms over the course of years is the best way to become a teacher.

Conclusions and discussion: perspectives on a pedagogy of work-based teacher education

A PWBTE has three important characteristics. The first is related to the invitational quality or affordance of the school, the second is the agency of the student teachers – the way they (want to) participate in practice. The third, and the main focus of this study, is the structuring of practice and guidance provided near and in actual practice. Thematic sessions at school and a developed mentoring approach are seen as structured practices in work-based teacher education.

Guidance near the workplace

As a first result of this study we may conclude that the guidance in thematic sessions near actual practice, based on transferred institutional courses, did not provide opportunities to integrate student teachers' working and learning. Sessions were insufficiently connected with actual practice, modelling was implicit and no attention was paid to the extension of student teachers' knowledge concerning new tasks and circumstances. Hence, guidance enacted in this way is not enough to make workplace learning really productive, a conclusion that fits the ideas of Bolhuis, Buitink, and Onstenk (2010). and therefore, did not really offer a contribution to a PWBTE.

Nevertheless, these highly practice-based sessions might become an important part of the work-based curriculum for student teachers. Based on the literature and the outcomes of this study, we can formulate some conditions that might improve such sessions. First, like the school psychologist who was present in one of the sessions, other teachers and school professionals could become involved in the sessions as co-educators or during (short) practical episodes, alternating with the more formal part of the sessions. As Siebert, Mills and Tuff (2009) stated, this may result in the contribution of other practitioners' personal knowledge that can lead to an enriched context and offers opportunities to create new knowledge by student teachers.

Secondly, talking *about* rather than *within* practice can be very helpful for student teachers, but these discussions should not be aimed at developing the theoretical concepts the SBTEs were talking about. Because of the need for propositional next to practical knowledge, we think that such discussions should stay part of the institutional curriculum. However, discussions about practice at school – based on student teachers' experiences in guided and unguided participation in practice, instead of approximations of practice through role plays – should become informed by more generalised knowledge by SBTEs and IBTEs (placed at schools) as a means for analysing and understanding practice. Tsui (2009) used the term 'practicalising theoretical knowledge' for this guidance aimed at helping student teachers to look beyond

their own experiences, mediating between the theoretical analytical frameworks the institute provides and knowledge and experiences afforded by actual practice. As a result, student teachers can develop personal interpretations of formalised knowledge as an aspect of their practical knowledge. Such conversations can help student teachers to rethink the limits of their experiences and knowledge from the perspective of new tasks and/or different circumstances. This type of guidance is one of the characteristics of a PWBTE. Important condition here is that student teachers themselves did experience relevant situations to the aspects of teaching at hand, which, however, was not always the case in the sessions analysed. An example of this approach seems, for instance, the sessions on 'Methodology on Location' in partner schools of a Dutch university of applied sciences. Each session at school lasts a whole day and during that day student teachers also experience the theme at hand in practice (Van de Kuilen, 2012). However, no results on the content and outcomes of these sessions were yet reported.

As, for instance, Beck and Kosnick (2002) and Zeichner (2010) stated, even in school-university partnerships, school and university remain two largely separate worlds that exist side by side, and the gaps between 'theory' taught at the institute and 'practice' experienced at school are hard to overcome. Practicalising theoretical knowledge by SBTEs (and IBTEs working at school) might help to diminish the ontological gaps between approximations of teaching at the institute and the 'real thing' at school. Especially when these sessions could be related to those held at the institute aimed at the development of (practically relevant) propositional knowledge. IBTEs placed at schools and SBTEs can play an important role in the alignment of these activities at the school and the institute. As a condition and as a result, SBTEs (and IBTEs) could, indeed, grow into what Sandholz and Finan (1998, p. 24) named 'boundary spanners', and Zeichner (2010, p. 94) referred to as 'hybrid teacher educators', and, more recently, by Akkerman, Bruining and Van den Eijnden (under review, p. 1) as 'brokers': practitioners who cross boundaries between the institute and the school with one foot in both praxes.

Guidance at the workplace

The second result of this thesis is related to guidance provided in actual practice in a collaborative mentoring approach we developed, and which was implemented by mentors, student teachers, and SBTEs. The guidance was aimed at (explicit) modelling of practical knowledge and is seen as an aspect of a PWBTE.

Experienced teachers guided student teachers participation based on learning needs and expected and unexpected teaching experiences. Critically discussing teaching (work-based modelling) in *lesson-based conversations* – talking about teaching within practice, in a structured way and informed by mentor teachers' practical knowledge – was experienced as more effective compared to regular mentoring conversations. Important conditions were related to (a) the characteristics of the mentoring approach, (b) personal characteristics of participants, and (c) organisational circumstances. Guidance provided during co-teaching, either as modelling or scaffolding, was seen as beneficial but proved to be difficult.

Mutual learning as a result of the critical dialogues and observations of both the mentor and the student teacher was reported, indicating the pedagogical relationship in this apprenticeship was not one-way, which can be a problem with 'modelling' because of the possibility of power related issues between the mentor and the student teacher or uncritically imitation. As stated by Fuller and Unwin (2004), mutual learning is an indication that this 'apprenticeship' was based on respect for expertise and for colleagues, regardless of age and status. Beside with that which mentors can learn from student teachers related to their own teaching, the uncovering and explaining of one's own teaching practice, which is so characteristic of this approach, is a necessity to realise robust professional development of (mentor) teachers (Lieberman & Pointer Mace; 2009).

According to Tsui (2009), making knowledge explicit can be considered as a quality of teachers and a prerequisite for conscious reflection and deliberation of practice. Such deliberation and reflection she named 'theorising practical knowledge'. Therefore, by sharing their

practical knowledge with student teachers, mentors theorise their practical knowledge and may contribute to reducing ontological gaps between practice enacted at school and taught at the institute, as an extension of the practicalising of theoretical knowledge by SBTEs (and IBTEs) during sessions. Although Tsui (2009) stated that both theorising practical knowledge and practicalising theoretical knowledge are strongly intertwined processes, we assume that in initial work-based teacher education these aspects can be divided between SBTEs (and IBTEs at school) and mentors. However, in order to make this division productive, collaboration and alignment between SBTEs (and IBTEs) and mentors are important conditions. Realising 'theorising practical knowledge' by mentors in lesson-based conversations before 'practicalising theoretical knowledge' by SBTEs in sessions might be helpful in diminishing the practice-theory gaps, considering the convictions of Hiebert and Morris (2012, p. 384) who stated that "learning to teach particular content from a particular curriculum to a particular group of students and, gradually, extracting the core practices of teaching is more developmentally appropriate than that promoted by the reverse sequence." To find out whether these assumptions on reducing the gaps between practice and theory and on the influence of the sequence mentioned by Hiebert and Morris (2012) on student teachers learning teaching might be true, more research is needed.

During *co-taught lessons* opportunities for modelling teacher behaviour became visible on two levels. First, while the mentor had the lead in teaching (implicit modelling) and second, while stepping in during lesson enactment by the student teacher (explicit modelling). In addition, support related to the teaching activities of the student teacher (scaffolding) could be observed.

Modelling and scaffolding during lesson enactment provided student teachers with opportunities to participate in practice in either more or less peripheral roles during lesson enactment. By stepping out, observing the mentor (support by modelling) or discussing suggestions (support by scaffolding) and subsequently stepping in again, the student teacher, to a certain extent, can practise new behaviour based on their observations of mentor teacher's behaviour and/or mentor's

suggestions. In this way an 'approximation of practice in real practice', an opportunity for learning teaching under easier conditions than in the harsh world of actual individual teaching, can be established.

Convictions about 'how to become a teacher' proved to be important. Convictions are part of the agency these student teachers bring with them to schools. The research of Timmermans (2012) on the agency of student teachers in partner schools should be extended with research on ideas and convictions related to choices student teachers make concerning the affordances of the school. Furthermore, research is needed on how student teachers can be prepared to make the best out of guidance provided.

Contributions to a pedagogy of work-based teacher education

We may conclude that notwithstanding the sessions by the SBTEs that did not reach their full potential, the enactment of these sessions can become a fruitful contribution to a PWBTE. An important condition is that the design of these sessions should not be simply based on institute-based sessions, but rather on actual teaching experiences (guided and unguided) of student teachers. These experiences should be confronted with theoretical insights, either by instruction, or by modelling and reflection, aimed at practicalising theoretical knowledge.

The collaborative mentoring approach can realise opportunities for student teachers to 'integrate work and learning'. This integration is an important affordance of partner schools aimed at student teachers developing their teaching competences and related practical knowledge. The guidance provided in this structured practice makes the school more of a learning environment than a place where training is delivered and student teachers can practice institutional assignments. As such, the mentoring approach and the modelling and scaffolding by mentors, although still difficult to enact, can be considered a promising contribution to a PWBTE.

New roles for mentor teachers

Systematically sharing practical knowledge by modelling and scaffolding, either in lesson-based conversation or in actual lesson enactment, is a new aspect of mentor teachers' work. In addition to providing student teachers with opportunities to participate in actual practice, they have to make their practical teaching knowledge explicit by showing teaching behaviour and by discussing this behaviour in a critical way with their student teachers. Creating such a context for learning asks from mentors that they not only can interpret the learning needs articulated by the student teacher, but also diagnose and understand the unnoticed problems of a student teacher while preparing, enacting and evaluating teaching. In order to realise this, they have to take on a novice position (e.g., Van de Pol, 2012), which according to, for instance, Feiman-Nemser (2001) is hard for them. Next, they need the observational tools and knowledge for this diagnosing, which sometimes (like in co-teaching conditions) must happen in the heat of actual classroom practice. Based on this diagnosis they must know how and when to react to problems related to *learning* to teach *by a student teacher.* In addition, they still function as a subject teacher, diagnosing pupils' problems and know how and when to react in order to support *pupil learning.* During lesson-based discussions, mentors should explain what they observed and why they reacted in the way they did. By doing this they support critical and deliberate practice-based discussions, the basis for theorising practice.

Up until now mentors are hardly seen as teacher educators. Their guidance as a contribution to a PWBTE asks for a reconsideration of this point of view. Mentors have to become acknowledged as teacher educators in the first order context of the school. In this context they act as teachers and as teacher educators, and role transitions are an important characteristic of their profession. Taking up the role of teacher educator in actual practice next to being a subject teacher is not something that is easily or even automatically done, but demands from the mentors that they make new connections between being a teacher and being a teacher educator. Clemans et al. (2010, p. 215)

described this process as mentors being 'lost and found in transition'. Our results cautiously indicate that mentor teachers can act as teachers and as teacher educators with role transitions during their guidance of student teachers. This challenge, however, asks for the development of new knowledge and skills for which the language related to the needed pedagogy of work-based learning and used in this thesis, might be helpful.

School-university partnerships in teacher education ask for a reconceptualisation of teacher education. We argued that the shared responsibility for the education of future teachers requires a pedagogy at school, next to the known pedagogies of the institute.

As a consequence, the nature of knowledge needed and the roles of teacher educators, both at school and at the institute, have to change. In the proposed PWBTE, guidance at school is aimed at learning teaching in actual practice instead of executing institute-based assignments. The mentor's role has to develop into 'theorising practice' and the role of school-based teacher educators into 'practicalising theory', mediating between learning at the institute and at school. What this might mean for the curriculum and pedagogies enacted at TEIs we do not know yet, and further research is highly necessary as a condition for the further development of teacher education in partnerships.

Limitations and directions for further research

Generalisation of the findings

These small-scale studies were enacted in schools that were partners in school-university partnerships, and, therefore, we have to discuss whether the studied guidance by cooperating teachers is limited to

these schools. Both the sessions at school, derived from the institutional curriculum, and the collaborative mentoring model are seen as an educational experience, jointly created by SBTEs, mentors and student teachers, and hence based on the enactment view on pedagogical activities of participants. As stated by Mckenney, Nieveen, and Van den Akker (2006), the ability to construct such experiences is helped or hindered by the quality of the externally created learning pathways for student teachers (such as the institute-based assignments and the mentoring approach in actual teaching). According to them, the professional capacities of the cooperating teachers, however, yield even stronger influences on the process (p. 72). We assumed that professional capacities of cooperating teachers required can be especially found in partner schools, as they were evaluated on this aspect in the assessment process of partnerships by the NVAO in 2009. Related to the demands in that process, the affordance of partner schools, an important condition of a PWBTE, should be based on, among other things, conditions such as having a supportive system of educated cooperating teachers and time and roster facilities to provide qualitative and quantitative guidance needed.

From the literature we gathered that it is important to have a school culture in which learning by teachers is as normal as learning by pupils (Scantlebury et al., 2008). Moreover, student teachers have to be acknowledged as colleagues by the school community (Ragonis & Hazzan, 2009). However, to further substantiate the assumptions related to the affordance of partner schools and to enhance our insight in the effectiveness and practicality of the studied guidance (also aspects of a PWBTE) and this assumed affordance, more research, both quantitative and qualitative, is needed in partner schools and in schools that are not involved in subsidised school-university partnerships.

A second aspect regarding the generalisation of the findings is the fact that student teachers participating in this project were in their final year of initial teacher education. Their (guided and unguided) participation in actual teaching was undisputed. For student teachers enrolled in universities of applied sciences (UAS), learning pathways

maybe should be realised during the first two (or even three) years of their education. The cognitive apprenticeship model might be helpful here to rethink a PWBTE aimed at a continuous development during the years. Gradually growing from peripheral to more central participation with the guidance of experienced teachers near and at the workplace should remain the focus.

The third limitation is related to the role of the researcher. In the preparatory sessions of the mentoring approach with SBTEs and mentors, the researcher acted as an institute-based teacher educator. The aims of the mentoring approach and the importance of sharing practical knowledge were explained, and, based on videotaped lessons taught by mentors, practical knowledge was discussed. When starting the enactment of the developed mentoring approach, the role of the researcher was meant to be non-interventionist, as it had been during the sessions at school. However, during the enactment of the first cycle of the mentoring approach, it became clear that the preparative sessions had not been sufficient. The researcher, invited by mentors and student teachers, also acted as an institute-based teacher educator during lesson-based conversations. Focus, however, was not on the student teacher, but the mentor instead. Being a role model for the mentor, mentor behaviour aimed at sharing practical knowledge in discussions about practice was modelled. During the second lesson cycle, the support of the researcher faded.

Implementing the collaborative mentoring approach thus asks for a more thorough preparation, but, as stated by the participating mentors, support during enactment is an important means for professional development aimed at sharing knowledge. Mentor support by the researcher (acting as an IBTE) was congruent with student teachers' support provided by mentors. Next to this support, individual and group interviews in between the mentoring cycles also had an impact on the ideas of the participants about this kind of mentoring. Consequently, implementation of the mentoring approach was influenced by these two activities; the modelling by the researcher during the first cycle of lesson-based conversations and the interviews in between the enacted cycles.

Additional analysis of the parts of the conversations in which the researcher took part showed two different kinds of interventions by the researcher. Firstly, the support of the researcher was aimed at refining the discussed behaviour of the mentor by bringing in supplementary observations and, together with the mentor, finding words to interpret the behaviour of the mentor and explain its origin and consequences to the student teacher. Secondly, the support was aimed at both participants by questioning what they discussed, in order to invite them to become more specific. Afterwards, this support by the researcher was discussed with the participants, who recognised the mentioned components, and who stated that they thought it an appropriate way of providing support. As an addition more formal arrangements for mentors, especially before starting the mentoring approach, were also needed. We conclude that more (design) research is needed on how to prepare mentors and student teachers for sharing practical knowledge, and subsequently on the impact of such a preparation on the guidance provided by mentors and ways student teachers participate.

Cooperating teachers' practical knowledge. In this study we did not question the nature of mentor teachers' practical knowledge. Related to the acknowledgement of mentor teachers' practical knowledge as an important part of the knowledge base of teacher educators in work-based teacher education, we still need more research. The work of, for instance, Meijer et al. (2002) and Zanting et al. (1998, 2003) can be helpful here. In addition, rethinking the knowledge base of teacher educators, valuing both propositional and practical knowledge required, and developing methods of both theorising practical knowledge and practicalising theoretical knowledge should become part of the search for shared pedagogies in school-university partnerships.

During thematic sessions SBTEs have to focus more than they did in this study, on opportunities for practicalising theory, and, hence, on what it means to act as boundary crossers in collaboration with institute-based teacher educators at school. 'Boundary crossing' is mainly known from the work on interorganisational learning and vocational education (see, for a review study on boundary crossing, Akkerman &

Bakker, 2011), and thinking about the meaning of this notion for teacher educators' activities and the learning of student teachers is rather new and under-researched. Zeichner (2010) showed what boundary crossing can look like in the practice of school-university partnerships and the problems that can come along with it. Another example is the work of Bullough and Draper (2004) who found power related issues between an IBTE and a SBTE in the judging of the learning of a student teacher. Akkerman, Bruining and Van den Eijnden (under review) not only studied the 'broker' actions of teacher educators, but also of other professionals, such as a school director and an administrator, both involved in a school-university partnership, and, last but not least, of student teachers. Both evaluative research into and design research aimed at developing these practices is needed. School-university partnerships, which aim at actually sharing the responsibility of student teachers' learning teaching without ignoring the inevitable tensions between school and university, seem to provide fruitful contexts for both these research approaches (e.g., Van de Ven & Oolbekkink, 2008; Bullough & Draper, 2004). Furthermore, research on activities of IBTEs at TEIs related to the activities of educators at school (both IBTEs and SBTEs) should provide more insight into student teachers' learning opportunities, based on the (desired) complementary affordances and pedagogies of schools and institutes.

Student teachers' learning outcomes. Up until now we do not really know whether student teachers are better educated in school-university partnerships compared to regular practicum schools. The results of Timmermans' (2012) research on competence development in partner schools, however, were not very encouraging. More quantitative study in which learning outcomes of partner and non-partner schools are compared, is required.

In the present study, student teachers, during interviews, did report benefits of the mentoring approach they experienced. The opportunities for shared lesson planning and the quicker emergence of learning needs, in addition to the opportunities to practise new behaviour were seen as important. The number of student teachers'

lessons observed, however, was too small to draw any conclusion on whether their teaching was actually improved by their participation in the mentoring approach. Expanding the research to student teachers who teach their own classes both before and after the time they are involved in this mentoring approach is necessary here.

The portfolios of student teachers hardly provided any insights into student teachers' learning outcomes related to the guidance provided at school. We do not know why student teachers reported so scarcely on their learning from their mentors. More research is needed to learn about assessment practices (including the content of portfolios) in partnerships and its effectiveness related to the PWBTE and understanding (the outcomes of) work-based learning.

Practical implications

Enactment of guidance near and at practice

Guidance in sessions near the workplace can become a contribution to a PWBTE. For reasons of cost efficiency it is, however, important to seek for opportunities to involve enough (student) teachers in those sessions. Opening up the sessions for different participants, such as, for instance, newly appointed teachers who recently graduated, can be helpful here. Actual shared experiences between the student teachers and the newly appointed ones, might be helpful for practicalising theory based on those experiences.

The enactment of the collaborative mentoring approach was considered helpful but time-consuming. Co-teaching in particular was considered difficult. Under the present-day circumstances, collaborative lesson planning and enactment, combined with more than one student teacher and even more mentors in a guidance team, could be a first step. An example of such a collaborative approach was studied by Staub, West, and Bickel (2003) in what they named 'content-focused

coaching', that in a way resembles our co-teaching approach. The work of Roth and Tobin (2002) and Tobin and Roth (2006) on coteaching also can be helpful here.

Professional development of mentors and SBTEs

Mentors appreciated the role modelling by the researcher, acting as an institute-based teacher educator, because it offered them opportunities for 'learning guiding' student teachers by sharing their practical knowledge. In addition to formal mentor education as advocated by, for instance, Orland-Barak(2010) and Ulvik and Sunde (2013), the professional development of mentors asks for a work-based curriculum for mentor education. Both institute- and school-based educators should play a role as role model for the mentor in theorising practical mentoring knowledge and practicalising the formal knowledge on mentoring. An important condition seems to be that these teacher educators understand mentoring as working as second order teachers in a first order context, and acknowledge the role transitions mentors have to make. Next to being a role model during lesson-based conversations, co-mentoring, especially when aimed at scaffolding student teachers' teaching, could provide opportunities for support during lesson enactment.

Besides the reluctance of teachers, and, consequently, of teacher educators to interfere in a classroom, an important constraint for co-mentoring is related to time. Attention by IBTEs for mentor support next to attention for student teachers' development at school might be helpful here. Information on tools such as work-based modelling and scaffolding must be provided and the use of these should be practised with, for instance, the help of videotaped lessons and role plays, next to the support in actual practice.

As we learned, convictions about how to become a teacher were important, and these convictions and their consequences for participation and guidance need to be discussed before actual guidance is provided. In addition to the activities of the SBTE and the IBTE, collaboration with other mentors based on critical professional dialogues

might also be helpful for mentors to make their convictions and ideas explicit and reflect on them. Such dialogues could, for instance, be based on case writing as shown in the program developed by Clemans et al. (2010) to support teachers who are in charge with leading the professional learning of colleagues at school.

'Boundary crossing' between the school and the institute is one of the new roles for school-based teacher educators (and also for institute-based teacher educators). Both SBTEs and IBTEs need support to realise these 'boundary crossing activities' in terms of time provided. But mere time is not enough, universities and schools must, right from the start of their career as teacher educators either at school or at the university, legitimate their activities and acknowledge the importance of these activities in relation to teacher education and, hence, their tasks, as, for instance, Zeichner (2010) experienced.

Preparing student teachers

Sharing practical knowledge between mentors and student teachers is aimed at (the improvement of) mutual learning and can be realized in reciprocal interactions during conversations and co-teaching. Student teachers expect to learn a lot from their practicum, but one might question whether they are ready to make the most of the opportunities schools have to offer them. Berg et al. (2007) identified six important themes that should be discussed before and during student teachers' participation in practice. Related to teachers' individual learning they acknowledged: (a) identification of student teachers' interests and abilities, and (b) student teachers' self-assessment. The other important aspects are: (c) communication of expectations and responsibilities, (d) collaboration between school and the institute, (e) connections between the assessment roles of mentors, SBTEs, and IBTEs, and (f) differences in work-based and institutional feedback and assessment.

Furthermore, attention should be paid to the differences between learning at the institute and at school, and tools should be provided to help student teachers observe and critically discuss the teaching of their experienced colleagues. Several studies (Ethel & McMeniman,

2000; Hagger & McIntyre, 2006; Meijer, Zanting, & Verloop, 2002; Zanting, 2001; Zanting et al., 2003) offer starting points for realising this development of student teachers' agency. In addition to developing skills such as questioning their mentors, concept maps can be a helpful tool for revealing individual practical knowledge related to specific classroom situations. Comparing and discussing individual maps made by student teachers, mentors and SBTEs will help to get an insight into (the development of) their knowledge and ways they understand context. In their dialogues they can subsequently discuss how they can integrate various aspects of this knowledge in order to bring about effective pupil learning.

We found rather limited information about the benefits of the guidance in the, at that time required, institutional portfolios (the most important assessment tool). Reflection on what was learned in terms of changed participation and, the potential consequences of this changed participation for further learning at work should be taken into account (e.g., Boud & Falchikov, 2006). Portfolios in which attention is paid to aspects of work-based learning as guided participation, could be a helpful framework for these kinds of reflections.

Towards a pedagogy of work-based teacher education

The contribution of this study to the development of a work-based pedagogy in school-university partnerships is limited to school-based sessions and one of the possible mentoring activities during student teachers' participation at school. Based on the outcomes of this study and further reflections based on literature a contribution towards a pedagogy of work-based teacher education can be summarised as presented in Table 1.

Collaborative practice, built on modelling and scaffolding, as in the mentoring approach, is, however, not the only activity helpful in sharing practical knowledge. Guided activities that were enacted but not studied in this research (such as, for instance, the reflective conversations with the SBTE and activities by the mentor not related to actual teaching) are also part of a PWBTE.

In addition, in school-university partnerships, and in the 'academically' orientated partnerships in particular, mentor teachers also can become engaged in student teachers' practical inquiry. This form of collaborative practitioner research is advocated by, for instance, Carter and Francis (2001), Gallimore, Ermeling, Saunders, and Goldenberg (2009) and, Van Veen, Zwart, and Meirink (2012). Lesson study, in particular, based on collaborative and systematic inquiry of lesson design and (co-)enactment, can be seen as a promising approach here (e.g., Hiebert & Morris, 2012). Such development, again, asks for new roles for mentor teachers, which are, however, consistent with growing professional demands from teachers, asking them to act as knowledge producers next to their contribution to the circulation of knowledgeability. Alongside student teachers, mentors can become involved in such collaborative practices, building communities of inquiry together with SBTEs and IBTEs. These activities across the boundaries between the communities of practice of the school and university also can strengthen school-university partnerships and contribute to a shared teacher education curriculum.

In the end, student teachers' learning teaching is aimed at supporting pupil learning and hence, student teachers are part of a 'chain of learners'. Mentors have to learn how to guide student teachers, and, in the end, pupils have to learn how to learn. Perhaps, the whole sequence here should be: '*learning guiding learning teaching learning learning*'. To better understand the implications of such a sequence of related educational activities, we advocate research programs with which these activities can indeed be studied in connection to each other. Although this might be hard, only then we will learn how to improve teacher education in school-university partnerships in a way that will, indeed, eventually result in better teachers and teaching, and, therefore, improve pupil learning.

This kind of research could, for instance, be situated in an expert centre for teacher educators such as Swennen pleaded for (2012, p. 286). She identified two important tasks for such a centre: the harmonisation of the professional development of (novice) teacher educators and the stimulation and coordination of professional and academic research for, about, and by teacher educators.

Table 1

Activities as Part of a Pedagogy of Work-Based Teacher Education

	During thematic sessions near the workplace	**During actual teaching**
Participants	SBTE and student teachers (other experienced practitioners, an IBTE working at school)	Mentor, student teacher and SBTE
Activities	- Discussing student teachers' experiences in guided and unguided participation in practice - Designing practical experiences related to the themes at stake in sessions (in and outside student teachers' classroom). These experiences should also be discussed in the related sessions - Discussing more generalised knowledge, related to experiences as mentioned before, as a means for analysing and understanding practice by making personal interpretations of formal knowledge	- Formulating student teachers' learning needs in relation to needed competences by SBTEs and student teachers as a focus in lesson based activities with mentors - Paying special attention to teaching aspects of student teachers' learning needs during lesson enactment by the mentor - Focussing on student teachers' learning needs next to experiencing the (un)expected aspects of teaching in lesson-based conversation and teaching by mentors - Critically discussing lesson preparation and evaluation by mentors and student teachers, aimed at sharing practical knowledge by modelling – practical teaching behaviour and the underlying pedagogical reasoning behind it – as a form of theorising practice by the mentor - Mentors and student teachers acting as teachers during co-teaching, both being responsible for the whole lesson - Using opportunities to model experienced teacher behaviour (addressing pupils and pupil learning) and scaffold student teachers teaching (addressing student teachers' teaching and learning), resulting in role transitions by mentors during lesson enactment - Using observation as a tool for diagnosing the needs of student teachers while teaching in order to react in an appropriate way during modelling and scaffolding by mentors - Explicating modelling and scaffolding during lesson-based conversations by mentors to enhance student teachers' understanding of the mentors' actions

Based on this study, we think it is important to emphasise the multi-perspective nature of such an expert centre. First, the centre should be directed at all (novice) teacher educators, either university or school-based. Second, work and research should be aimed at work-based as well as institute-based teacher education and its coherence. Third, the focus should be on a diversity of professional teacher educator roles, and, last but not least, various theoretical and practical perspectives on becoming a professional in teacher education should inform this work and research.